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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,846	09/17/2001	Y. Tom Tang	PF-0556-1 DIV	9384

27904 7590 09/24/2003

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EXAMINER	
LI, RUIXIANG	
ART UNIT	PAPER NUMBER
1646	8

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/954,846	TANG ET AL.	
	Examiner	Art Unit	
	Ruixiang Li	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9, 11-17, 19, 20, 24-28, and 46* is/are pending in the application.

4a) Of the above claim(s) *1,2,8,13-17,19,20 and 24-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-7, 9, 11, 12, and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicants' election with traverse of Group II, Claims 3-7, 9, 11, 12, and 46, drawn to SEQ ID NO: 4, in Paper No. 7 is acknowledged. The traversal is on the ground that Groups IV, IX, and X, drawn to methods of using the product of Group II, could be examined together with group I. This has been fully considered but is not deemed to be persuasive because Group I is related to Groups IV, IX, and X as product and process of use. They are distinct inventions for the reasons set forth in the previous Restriction Requirement (Paper No. 6). However, upon allowance of a product claim, method claims comparable in scope to the allowed product claim will be rejoined.

   The requirement is still deemed proper and is therefore made FINAL.

2. Claims 1-9, 11-17, 19, 20, 24-28, and 46 are pending. Claims 3-7, 9, 11, 12, and 46 are under consideration. All other claims are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. It is further noted that claims 24 and 25 are not listed in the pending claims in paper No. 7. Clarification is requested.

Priority

3. Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 to Application No. 09/107,248, filed on June 30, 1998. However, since the claimed invention in Application Serial No. 09/954,846, which is a divisional

application of 09/107, 248, does not appear to have a patentable utility, the claimed subject matter is not entitled to the priority of the filing date of 09/107,248, June 30, 1998.

Drawings

4. The drawings filed on September 17, 2001 are accepted by the Examiner.

Rejections—35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 3-7, 9, 11, 12, and 46 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility.

Claims 3-7, 9, 11, 12, and 46 are drawn to an isolated polynucleotide, host cell, and a method of producing a polypeptide. The claimed invention is not supported by either a specific and substantial asserted utility or a well-established utility. A specific and substantial utility is one that is particular to the subject matter claimed and that identifies a "real world" context of use for the claimed invention which does not requires further research.

The specification discloses a polynucleotide of SEQ ID NO: 4 encoding a polypeptide of SEQ ID NO: 2. The specification asserts that analytical programs identify a thioredoxin family motif in the polypeptide of SEQ ID NO: 2 (lines 24-25 of

page 13). The specification further asserts that northern analysis shows the expression of this sequence in various libraries, at least 71% of which involve cell proliferation and at least 16% of which involve inflammation and the immune response (lines 25-27 of page 13)). However, the specification fails to disclose "the thioredoxin family motif" in SEQ ID NO: 2. More importantly, the specification fails to disclose specific biological functions or any physiological significance of the polypeptide of SEQ ID NO: 2 or the polynucleotide of SEQ ID NO: 4. There is no specific and substantial utility disclosed in the instant disclosure.

The instant disclosure asserts that the present polypeptides may be administered to a subject to treat or prevent a cell proliferative disorder (bottom of page 21) and that the polynucleotides sequences may be used for the diagnosis of cell proliferative, inflammatory, and viral disorder associated with expression of TRXP (bottom of page 30). These asserted utilities are not specific and substantial because they do not identify or reasonably confirm a "real world" context of use. The disclosure neither identifies the biological functions of the claimed molecules nor any disorders that are associated with the claimed molecules. Clearly, further research would be required to determine the functions of the claimed molecules or to identify a disease that can be treated or diagnosed with the claimed molecules See *Brenner v. Manson*, 383 U.S. 519, 148 USPQ 689 (Sup. Ct. 1966), noting that "a patent is not a hunting license. It is not a reward for the search, but compensation for its successful conclusion."

The invention also lacks a well-established utility. A well-established utility is a specific, substantial, and creditable utility that is well known, immediately apparent, or

implied by the specification's disclosure of the properties of a material. No art of record discloses or suggests any property or activity for the claimed molecules such that another non-asserted utility would be well-established for the compounds.

7. Claims 3-7, 9, 11, 12, and 46 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Furthermore, even if the polynucleotide sequence set forth in SEQ ID NO: 4 which encodes the polypeptide of SEQ ID NO: 2 were to have a patentable utility, the instant disclosure would not be found to be enabling for the full scope of the claimed invention.

The factors that are considered when determining whether a disclosure satisfies enablement requirement include: (i) the quantity of experimentation necessary; (ii) the amount of direction or guidance presented; (iii) the existence of working examples; (iv) the nature of the invention; (v) the state of the prior art; (vi) the relative skill of those in the art; (vii) the predictability or unpredictability of the art; and (viii) the breadth of the claims. *Ex Parte Forman*, 230 USPQ 546 (Bd Pat. App. & Int. 1986); *In re Wands*, 858 F. 2d 731, 8 USPQ 2d 1400 (Fed. Cir. 1988).

Claims 3, 6, 7, and 9 as written recite a genus of polynucleotides encoding (i) a polypeptide comprising a naturally occurring amino acid sequence having at least 90% identity to SEQ ID NO: 2 or (ii) fragments of SEQ ID NO: 2; claim 11 recites a genus of polynucleotides comprising a naturally occurring polynucleotide sequence having at least 90% identity to SEQ ID NO: 4; claim 12 recites an isolated

polynucleotide comprising at least 60 contiguous nucleotides of SEQ ID NO: 4 or its natural variants.

However, other than the polynucleotide sequence of SEQ ID NO: 4 encoding the polypeptide of SEQ ID NO: 2, the disclosure fails to provide sufficient guidance, information or working examples regarding the structural and functional requirements commensurate in scope with what is encompassed by the instant claims. The disclosure does not show (i) which portions of SEQ ID NO: 4 are critical to the activity of the polypeptide of SEQ ID NO: 2; and (ii) what modifications (e.g., substitutions, deletions or additions) one can make to SEQ ID NO: 4 will result in protein mutants with the same functions as the polypeptide of SEQ ID NO: 2. The state of the art (See, e.g., Ngo, et al, *The Protein Folding Problem and Tertiary Structure Prediction*, 1994, Merz, et al. (ed.), Birkhauser, Boston, MA, pp. 433 and 492-495) is such that the relationship between sequence of a protein and its activity is not well understood and is not predictable. Excising out portions of a protein or modifications to a protein, e.g., by substitutions or deletions, would often result in deleterious effects to the overall activity and effectiveness of the protein.

Furthermore, the term, "biologically active", as defined in the specification (bottom of page 7), refers to a protein having structural, regulatory, or biochemical functions of a naturally occurring molecule. Thus, the term is so broad that it encompasses any function or activity of a protein. However, the specification fails to provide any sufficient information on the function of the polypeptide set forth in SEQ ID NO: 2 encoded by SEQ ID NO: 4.

Since the disclosure fails to provide sufficient guidance and information to enable one skilled in the art to predict which if any fragments of the whole molecule would be reasonably expected to retain characteristic activities alone and the general disclosure that one could make and use SEQ ID NO: 2 or SEQ ID NO:4 could not be used to be such guidance as to guide one skilled in the art to make and use the invention commensurate in scope with the claims, the disclosure fails to enable such a myriad of the claimed nucleic acid molecules that not only vary substantially in length but also in nucleic acid composition and to provide any guidance to one skilled in the art on how to make and use the claimed polynucleotides. Thus, it would require undue experimentation for one skilled in the art to make and use the claimed genus of polynucleotides and polypeptides embraced by the instant claims.

Claim Rejections—35 USC § 112, 1st paragraph

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 3, 6, 7, 9, 11, and 12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

The specification discloses a polynucleotide comprising a polynucleotide sequence set forth in SEQ ID NO: 4, which encodes a polypeptide of SEQ ID NO: 2. However, claims 3, 6, 7, and 9 as written recite a genus of polynucleotides encoding

(i) a polypeptide comprising a naturally occurring amino acid sequence at least 90% identical to SEQ ID NO: 2 or (ii) fragments of SEQ ID NO: 2, whereas claim 11 recites a genus of polynucleotides comprising a naturally occurring polynucleotide sequence at least 90% identical to SEQ ID NO: 4. In addition, claim 12 recites an isolated polynucleotide comprising at least 60 contiguous nucleotides of SEQ ID NO: 4 or its natural variants. Thus, the claims encompass a huge number of nucleic acids that vary substantially both in length and in nucleotide composition.

The instant disclosure of a polynucleotide sequence of SEQ ID NO: 4 that encodes the polypeptide of SEQ ID NO: 2 does not adequately support the scope of the claimed genus, which encompasses a substantial variety of subgenera including full-length genes. A description of a genus of cDNA may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus, or of a recitation of structural features common to the genus, which features constitute a substantial portion of the genus. *Regents of the University of California v. Eli Lilly & Co.*, 119 F3d 1559, 1569, 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The instant disclosure fails to provide sufficient description information, such as definitive structural or functional features of the claimed genus of polynucleotides. There is no description of the conserved regions that are critical to the structure and function of the genus claimed. There is no description of the sites at which variability may be tolerated and there is no information regarding the relation of structure to function. Since there is no disclosure on the specific biological functions of the claimed molecules, the functional limitation, "biologically active" or "immunogenic" does not effectively limit the scope of the claimed invention.

Furthermore, the prior art does not provide compensatory structural or correlative teachings to enable one skilled in the art to identify the encompassed polynucleotides as being identical to those instantly claimed.

Due to the breadth of the claim genus and lack of the definitive structural or functional features of the claimed genus, one skilled in the art would not recognize from the disclosure that the applicant was in possession of the claimed genus.

Claim Rejections—35 USC § 112, 2nd paragraph

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 11 and 46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 is indefinite because it recites the "an RNA equivalent". It is unclear what are the metes and bounds of the term. Since neither the art nor the specification provides an unambiguous definition for the term, the claim is indefinite. Claim 46 depends upon claim 11.

Claim Rejections—35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 3, 4, 6, 7, 9, 11, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato et al. (WO200005376-A2, February 3, 2000).

Kato et al. teach a nucleotide sequence encodes a polypeptide that is 100% identical to SEQ ID NO: 2. The nucleotide sequence taught by Kato et al. shares 97.7% identity with SEQ ID NO: 4 and comprises 1520 contiguous nucleotides of SEQ ID NO: 4 (see attached sequence alignment). Kato et al. also teach an expression vector, a host cell, and a method of producing the protein (see, e.g., claims 5 and 6). Thus, the references taught by Kato et al. meets the limitations of claims 3, 4, 6, 7, 9, 11, and 12.

Claim Objections—Minor Informalities

14. Claims 3, 4, and 9 are objected to because they depend upon unelected claims, claims 1 and 2. Appropriate correction is required.

15. Applicant is advised that should claim 5 be found allowable, claim 46 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ruixiang Li whose telephone number is (703) 306-0282. The examiner can normally be reached on Monday-Friday, 8:30 am-5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler, can be reached on (703) 308-6564. The fax phone number for this Group is (703) 305-3014 or (703) 308-4242.

Communications via Internet e-mail regarding this application, other than those under 35 U.S.C. 132 or which otherwise require a signature, may be used by the applicant and should be addressed to [yvonne.eyler@uspto.gov].

All Internet e-mail communications will be made of record in the application file. PTO employees do not engage in Internet communications where there exists a possibility that sensitive information could be identified or exchanged unless the record includes a properly signed express waiver of the confidentiality requirements of 35 U.S.C. 122. This is more clearly set forth in the Interim Internet Usage Policy published in the Official Gazette of the Patent and Trademark on February 25, 1997 at 1195 OG 89.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Ruixiang Li
Examiner
September 23, 2003